

U.S. DEPARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration

OFCM



OFFICE OF THE FEDERAL COORDINATOR FOR  
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

# **PROCEEDINGS OF THE FORUM ON URBAN METEOROLOGY**



## **Meeting Weather Needs in the Urban Community**

**September 21-23, 2004  
Doubletree Hotel and Executive Meeting Center  
Rockville, Maryland (USA)**

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Washington, DC  
March 2005

## FOREWORD

The United Nations predicts that by 2025, 60 percent of the world's population will live in cities. In fact, at the present time, nearly two-thirds of the U.S. population lives in urban areas occupying less than two percent of the landmass, and as urban populations grow and become more concentrated, they become more vulnerable to severe weather, homeland security incidents, risks from air and water quality, and climatic variations. Urban decision makers responsible for safety and well-being of their cities are demanding predictions with greater specificity and greater accuracy. The time is right for advances in the area of urban meteorology because of greater concern over public health and safety; new urban focus on potential acts of terrorism; and technology advances and increased spatial and temporal resolution capabilities in remote sensing, observations, assimilation, modeling, and prediction. Communication of weather information has to be an end-to-end process which includes the complete weather and climate database and all results of applications (such as models, forecasts, advisories, and warnings), and supports a wide spectrum of users in all levels of government, industry partners, and the general public.

In response to these concerns the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM), in partnership with the Department of Homeland Security (DHS) Science and Technology Directorate, conducted a User Forum on Urban Meteorology September 21-23, 2004. The theme of the forum was *Information to Improve Community Responses to Urban Atmospheric Hazards, Weather Events, and Climate*. It focused on the following elements of urban meteorology: severe weather, homeland security, air quality, water quality, and climate. The forum's agenda included key presentations at the beginning and end of the forum, five plenary session panels, and six workshop sessions scheduled in pairs. The forum's objectives were to: reduce high impact weather and climate risks and improve the quality of life in urban areas; increase understanding and facilitate the transfer of emerging science and technology to meet today's urban weather and climate challenges; improve forecasting in coastal areas and areas with complex terrain; and set the stage for building user-tailored decision support systems for real-time response to the spectrum of hazardous weather events and atmospheric conditions.

This document summarizes the proceedings of the forum and provides a foundation for building on our successes. We are now developing clear guidelines and direction for establishing an interagency working group to address the actions that resulted from the forum. Activities will address the following crosscutting issues: regional ecosystems planning and management; public health and safety; urban observations; research and technology; urban modeling; information dissemination; education, outreach, and training; support for business continuity; and risk management and risk communication for time scales ranging from emergency preparedness (rapid response) and severe weather (intermediate time scales) to seasonal and generational climate fluctuations. I wish to thank the DHS Science and Technology Directorate and the more than 120 individuals from Federal, state, and local government, private industry, and academia, who were instrumental in making this forum a huge success.

Sincerely,

Samuel P. Williamson  
Federal Coordinator for Meteorological  
Services and Supporting Research

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Ms. Chris Elfring, *Director, Board on Atmospheric Sciences and Climate, National Academy of Sciences*

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## SYNTHESIS

### Abbreviated Panel Summaries from Panel Co-moderators

Mr. Robert Dumont, DOC/NOAA/OFCM

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### Extended Panel Summaries

#### **Panel 1: Safety, Health, and Economic Impacts of Weather and Climate in the Urban Environment**

**Panel Co-moderators:** (1) Mr. Raymond J. Ban, The Weather Channel, Inc.; and (2) Dr. John A. Dutton, The Pennsylvania State University

**Panelists:** (1) Dr. John Hayes, DOC/NOAA/NWS; (2) Dr. Josephine Malilay, DHHS/CDC; (3) Mr. Richard Carbone, NCAR; and (4) Dr. Sharon Leduc, DOC/NOAA/NESDIS

3-2-1

#### **Panel 2: Regional Ecosystem Approaches to Urban Environmental Hazard Management**

**Panel Co-moderators:** (1) Dr. Douglas DeMaster, DOC/NOAA/NMFS; and (2) Dr. Laurence S. Kalkstein, University of Delaware, Center for Climatic Research

**Panelists:** (1) Mr. Leroy Spayd, DOC/NOAA/NWS; (2) Mr. Allan Stahl, USDA/Natural Resource Conservation Service; (3) Mr. Charles B. Chestnut, USACE/Institute for Water Resources; and (4) Dr. Sue Grimmond, International Association for Urban Climate

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#### **Panel 3: Adequacy of Urban Weather Observations**

**Panel Co-moderators:** (1) Dr. Ken Crawford, Oklahoma State University; and (2) Dr. Rayford Hosker, Jr., DOC/NOAA/OAR

**Panelists:** (1) Dr. Walter Dabberdt, Vaisala; (2) Mr. Richard Fry, DOD/DTRA; (3) Dr. Jan Dutton, AWS Weather Bug; and (4) Dr. John McGinley, DOC/NOAA/OAR

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#### **Panel 4: Research and Development for Urban Weather and Climate Applications**

**Panel Co-moderators:** (1) Dr. Alexander MacDonald, DOC/NOAA/OAR; and (2) Dr. J. Marshall Shepherd, NASA/Goddard Space Flight Center

**Panelists:** (1) Dr. Robert Bornstein, San Jose State University; (2) Dr. Lloyd A. Treinish, IBM Thomas J. Watson Research Center; (3) Mr. John Pace, DOD/DTRA; and (4) Mr. David Williams, EPA/Office of Research and Development/Environmental Sciences Division

3-2-11

#### **Panel 5: Managing Risk in the Urban Environment**

**Panel Co-moderators:** (1) Ms. Margaret Davidson, DOC/NOAA/NOS; and (2) Mr. Harvey Ryland, Institute for Business and Home Safety

**Panelists:** (1) Mr. Ranger Dorn, Ventura County Fire Department; (2) Mr. John Gambel, DHS/FEMA; and (3) Ms. Janet Anderson, USDA Forest Service/Fire and Aviation Management

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#### **Abbreviated Workshop Summaries from Workshop Cochairs**

Lt Col Robert Rizza, DOD/USAF/OFCM

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#### **Extended Workshop Summaries**

##### **Workshop 1A: How to Improve the Content of Weather Observations to Meet Modeling and Operational Needs for Urban Areas**

**Workshop Cochairs:** (1) Dr. Stephen Lord, DOC/NOAA/NWS; and (2) Col Mark Weadon, DOD/USAF

4-2-1

##### **Workshop 1B: Understanding the Needs of Urban Communities and Businesses**

**Workshop Cochairs:** (1) Mr. Floyd Hauth, OFCM/STC; and (2) Dr. Betty Hearn Morrow, Florida International University Emerita

4-2-4

**Workshop 2A: Measurement Strategies for the Urban Weather and Climate Domains (sensors, data collection, transmission, archiving, etc.)**

**Workshop Cochairs:** (1) Mr. Richard Fry, DOD/DTRA; and  
(2) Dr. Sharon LeDuc, DOC/NOAA/NESDIS 4-2-10

**Workshop 2B: Research and Development Needs for Ecosystem Approaches to Urban Health and Environmental Issues**

**Workshop Cochairs:** (1) Dr. Robert Bornstein, San Jose State University; and (2) Dr. John R. Scala, Millersville University 4-2-15

**Workshop 3A: Communicating Hazardous Weather Risks in the Urban Environment**

**Workshop Cochairs:** (1) Dr. David Krantz, Columbia University; and (2) Ms. Sandy Thomson, WANE-TV, Fort Wayne, IN 4-2-21

**Workshop 3B: Research and Development Resources to Address Deficiencies in Modeling for Urban Weather, ATD, Space Weather, and Climate Applications**

**Workshop Cochairs:** (1) CDR Stephanie Hamilton, DOD/USN/DTRA; and (2) Dr. Steve Hanna, Harvard School of Public Health 4-2-25

**Forum Outcomes**

Dr. Elbert W. (Joe) Friday, *WeatherNews Professor of Meteorology and Founding Director of the Sasaki Applied Meteorology Research Institute, University of Oklahoma*  
and  
Dr. Paul D. Try, *Senior Vice President, Science and Technology Corporation* 5-1

**Next Steps**

Ms. Margaret McCalla, *Senior Staff Meteorologist, OFCM* 6-1



## **Closing Comments and Forum Adjournment**

Mr. Samuel P. Williamson, *Federal Coordinator, Office of  
the Federal Coordinator for Meteorological Services and  
Supporting Research*

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